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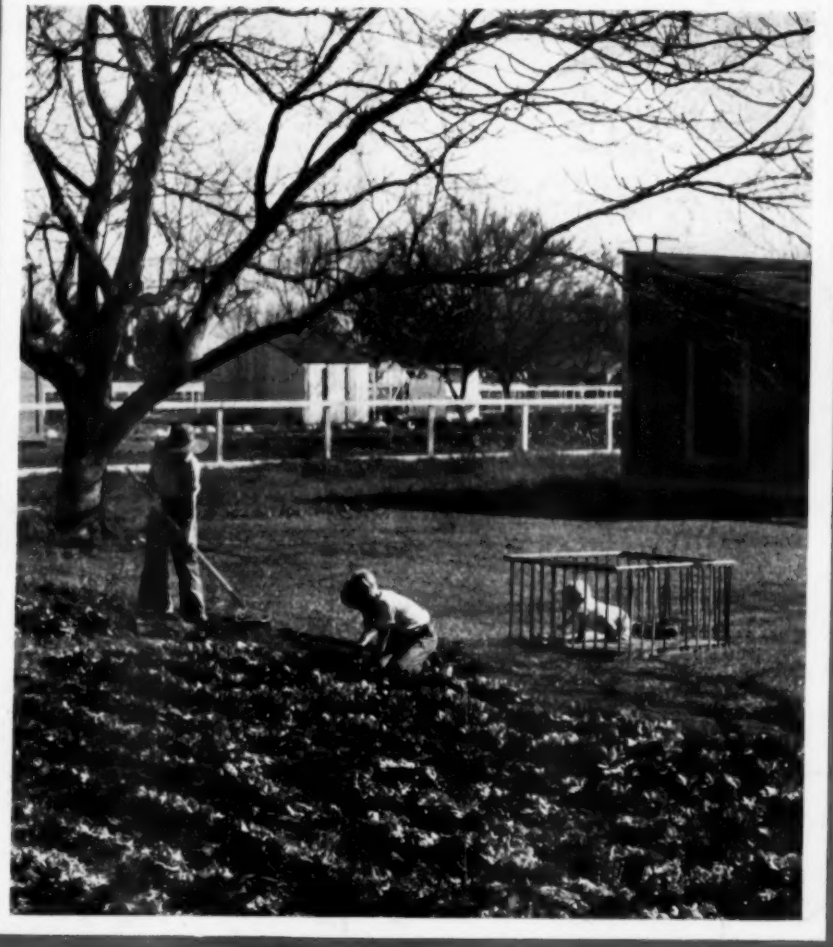
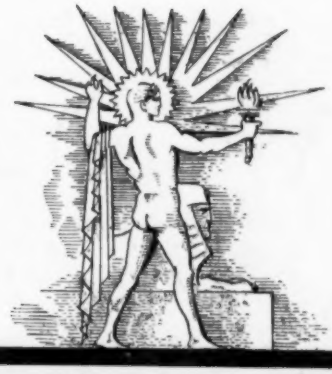
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •





March 28, 1942

For Victory

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A SCIENCE SERVICE PUBLICATION

Do You Know?

Most of the *sand* on our beaches comes from eroded sandstone on the ocean floor.

Early Roman aristocrats set up salt-water tanks in their villas to keep *oysters* fresh.

Niacin is now the official name for the pellagra-preventing vitamin once known as nicotinic acid.

The *Diesel-electric* locomotives can start a long train in half the time a steam locomotive requires.

The *mourning dove,* sometimes called turtle dove, is the only game bird that breeds in every State.

More than three million cotton undergarments treated to protect the body against *gas* have been ordered by the U. S. Army.

Up to 1942 the war effort cost this country over six billion feet of *wood*—a need of twelve to fifteen billion feet is estimated for 1942.

The older Gullah Negroes of the Sea Islands of the South Carolina and Georgia coasts still believe that a child born with a *caul* has a gift for seeing ghosts.

Wrestlers of certain African tribes wear iron bracelets equipped with cutting edges or spikes—a bad blow often puts the loser to bed for as long as three months.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article*

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Enough *lumber* is used in crating a bomber to build a five-room house.

The *hourglass* is said to have been originally used to limit the length of sermons.

Wild roses are found in every section of North America from the Arctic circle to Mexico, a Department of Agriculture scientist states.

Soybean oil is proving very satisfactory for paint making in place of linseed oil in tests conducted by the U. S. Department of Agriculture.

Wealthy women of ancient Greece dressed before silver *mirrors.*

The common Virginia *opossum* differs little from the 'possums of sixty million years ago.

A *cannon* big enough to stop a tank has no more kick than a 3,000-pound tractor when it pulls a plowshare against a buried rock.

In *Navy plane* designations, "V" means heavier-than-air type; "X", indicates experimental design; "Z", lighter than air (balloons, blimps, dirigibles).

SCIENCE NEWS LETTER

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MEDICINE

Infantile Paralysis Proved To Be Year-Round Disease

Virus Has Been Isolated From One Paralytic Patient And One Non-Paralytic in the Middle of January

FIRST positive evidence that infantile paralysis is a year-round disease is reported by Dr. Albert B. Sabin and Dr. Robert Ward of the University of Cincinnati. (*Science,* March 20.)

Although the disease has long been reported to occur in the winter, the virus, or invisible germ, which causes infantile paralysis has never been isolated from winter cases. The disease is most common, of course, in summer and autumn.

Drs. Sabin and Ward now report the first isolation of the infantile paralysis virus from winter cases; one non-paralytic patient and one paralytic patient in Cincinnati during the middle of last January. The germ was also isolated from an apparently healthy younger brother or sister of each case. This latter discovery indicates that winter infantile paralysis may be spread by human carriers, while the more frequent summer and autumn cases are spread by a number of factors, possibly insects such as flies.

In support of the insect-spread theory, the Cincinnati physicians state they have recently been able to demonstrate the virus in the blood of monkeys paralyzed after infection by mouth with a virus strain of recent human origin.

Thus blood-sucking and biting insects (such as mosquitoes or flies) must be considered as possible spreaders of infantile paralysis. Drs. Ward and Sabin have actually demonstrated the presence of the virus in eight of 15 batches of flies trapped during recent outbreaks of the disease in Atlanta and Cleveland.

Since with one exception the insects were not caught in the vicinity of privies, and the infantile paralysis patients had been in the hospital for days or weeks, the two physicians are unable to say where the insects got their virus.

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GENETICS

Statistical Methods Aid In Human Heredity Study

STATISTICAL statements of the probability of inheritance of a given trait in human heredity cannot predict how a particular individual will turn out, but do have potential value when large numbers are taken into account, states Prof. J. B. S. Haldane, noted geneticist of the University of London, in the concluding chapter of a new book *New Paths in Genetics* (*Reviewed, SNL, this issue*).

"It is true," he conceded, "that there is almost always an element of uncertainty in predictions concerning individuals. But when we deal with millions, probability becomes certainty, and conjecture accurate prediction. And when Herr Hitler writes of the evil effects of race crossing it seems worth while to point out that a race is nothing homogeneous, but a collection of very various individuals who have something in common which can only be accurately described in terms of the statistical methods which we are working out. Before we can speak accurately of the evil effects of so complicated a process as a racial cross it would be well to investigate the evil effects of a single gene substitution.

"We geneticists who are working on the accurate description and analysis of human genetics stand between two extremes, the conservatives who do not wish to see scientific method applied to human affairs, and the reactionaries who would apply half-baked science to them in the interests of a particular class or nation. Unlike conservatism and reaction, progress demands clear thinking. If this book can help towards clear thinking on human genetics it will not have failed."

Growth of cities in Europe is credited, in another chapter, with the improvement of human heredity through the wiping out of hereditary defects. When people lived and died in the same small village circle, cousins marrying cousins for generation after generation, defects resulting from recessive genes kept cropping up as a result of this inbreeding. But when people began to migrate and to mix the population, human outbreeding became the rule and many of these once common defective genes eventually became lost.

Science News Letter, March 28, 1942

WAR AGAINST SCIENCE

This photograph, distributed by the Soviet news photograph agency Sovfoto, shows the building of the Pulkovo Observatory demolished by German shells. The Pulkovo Observatory is a large astronomical observatory located near Leningrad.

GENERAL SCIENCE

25,000 Women Will Be Employed By Armed Forces

Navy Wants Immediately Women With College Degrees Who Also Hold Amateur Radio Licenses; For Locators

A CIVILIAN Army of at least 25,000 women will be employed by the United States armed forces to operate radio locators of enemy planes and do other vital work in the field of radio.

This announcement was made by George W. Bailey, chairman of the radio section of the Office of Scientific Research and Development before the Conference on War Demands for Trained Personnel conducted in Washington, D. C., by the Institute of Women's Professional Relations.

The Navy right now wants women with college degrees, preferably in physics, who also hold amateur radio licenses, Mr. Bailey said. They will be started at once on a salary of $2,000 a year either on radio locator work, in research laboratories, or in the development and installation of radio communication facilities.

College women who hold degrees in physics or electrical engineering, but have no radio experience, will also be taken on as junior physicists and junior engineers at $2,000 a year.

Women who hold amateur radio licenses, but do not have degrees, will be started at once on radio communication facilities at $1,620 a year.

The Signal Corps of the United States Army will soon offer jobs to college women with similar qualifications.

"This is a radio war," declared Mr. Bailey. "This war is not exclusively a soldier's war: it is a civilian's war, it is a scientist's war, it is a woman's war. Woman has a very definite part, and she must be trained to do that part. To do it most effectively, she must be trained especially as a scientist, a physicist, an engineer, or a technician."

The demand for technically trained women will far exceed the supply available now, or in the next few years, Mr. Bailey predicted. And the demand for men who have degrees in either electrical engineering or physics, with some radio training or experience, is practically unlimited. These men are wanted to serve as commissioned officers in the Signal Corps Reserve and in the Naval Reserve. Age limits are from 19 to 50.

Men and women going into war service in this field now will find their services in great demand after the war, Mr. Bailey predicted.

"Some day this war will end," he said. "Then the electronic devices used so effectively to help end it, will be available for commercial purposes.

"I wish that I might tell you of the possible uses of these devices. They are marvelous beyond the comprehension of the average person, but I assure you that there will be a need for a large number of skilled men and women to install and operate them for use in every-day life."

Science News Letter, March 28, 1942

Psychologists in Army

THE ARMY doesn't want men who can't even keep in step.

Inability to coordinate and to grasp instructions or remember orders are among the failings which make a man a misfit in the Army, Dr. Ruth Tolman, chairman of the National Research Council's Sub-Committee on Services of Women Psychologists, told the Conference.

It is to detect in advance such failures and to sort men according to their abilities that the Army's General Classification Test was developed by Adjutant General's Office.

Such psychological work in the Army and similar work on selection in the Navy, Civil Aeronautics Administration and other government departments employ more than 500 of the nation's total pool of about 3,000 psychologists, Dr. Tolman indicated. Although these are mostly men, they leave jobs open for women.

"If democracy is to survive," she said, "young adults must continue to be trained and problem and defective children cared for. . . We must not permit the urgency of these times and the impulse to plunge at once into work immediately related to the war to undermine the depth and thoroughness of training. Brigadier General Rose, assistant to the Adjutant General, said recently in speaking of personnel requirements of the Army: 'First of all, the Army needs educated men, and consequently young men should be urged to continue their education as long as possible before volunteering for military service.' It will be in large part women on the faculties of colleges and universities who must undertake the job of education."

Other fields demanding the services of women psychologists were listed by Dr. Tolman as including: child care; mental testing for local draft boards; classification of workers in industry; planning for reeducation of wounded soldiers, particularly the brain-injured; solving special problems connected with mentally deficient women and girls near Army camps; training of men rejected by Army for illiteracy; training of civilian leaders; and education for health.

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Even in comparatively inactive captivity, the *mole* will sometimes eat more than its weight in a day.

PARATROOPER AND NURSE

Here are two very different uniforms prepared by the U. S. Army Quartermaster Corps for different functions in the service. At the right is an Army nurse from Walter Reed Hospital. At left is a paratrooper in the new uniform designed to enable him to fight efficiently in his specialized type of battle. The photograph is an official one by the U. S. Army Signal Corps.

IN DEFENSE OF FREEDOM

Equipped by the U. S. Army Quartermaster Corps for fighting in every type of climate and specialized duty are these soldiers lined up for inspection on Washington's Mall. The uniforms are (left to right) snow shoe trooper, summer or tropical field, winter field, armored force, ski trooper, paratrooper and summer mounted. The photograph is an official one of the U. S. Army Signal Corps.

PUBLIC HEALTH

Millions of Doses of Yellow Fever Vaccine Protect Army

Provided Without Charge by Rockefeller Foundation And Sent in Large Numbers To Africa; Typhus Active

OVER 4,000,000 doses of yellow fever vaccine, nearly half of them furnished the U. S. Army and Navy, have been provided by the Rockefeller Foundation without charge as a part of a gigantic international battle against disease that has been accelerated by war.

These protective medical shots have been sent in large number to East Africa, since the report by Dr. Raymond D. Fosdick, president, just issued shows that 1,662,380 doses went to that area, presumably much of it to troops in that strategically important part of the world.

Several million more doses will be supplied the American armed forces during 1942, the annual report reveals.

The importance of research programs to combat malaria, typhus and influenza is stressed by Dr. Fosdick. Usually such diseases cause more deaths than bullets.

Typhus is now active in many parts of Europe, Dr. Fosdick warns. Epidemics are now building up in southern Spain, while other focuses of the disease are in Poland, Rumania and neighboring countries. The report observes that medical science does not yet know how best to control or eradicate the breeding of lice, carriers of the disease, under war conditions, nor has there been found any highly effective or reliable method of immunization.

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MEDICINE

Undernourishment Increases Resistance to Viruses

RESISTANCE to infantile paralysis and other diseases caused by viruses may depend on whether or not the cells of the body are thirsty for water and are well-fed or undernourished, it appears from experiments reported by Dr. Douglas H. Sprunt, of Duke University School of Medicine (*Journal of Experimental Medicine,* March).

Thirstiness, not just in a dry mouth but in every cell of the body, lessens resistance to vaccinia, the virus used in vaccinating against smallpox, Dr. Sprunt discovered in experiments on rabbits. Infantile paralysis, scientists have already observed, often strikes children and young people after athletic contests or similar physical exertion in the summer. Water sweated from the body at such times may have created such a dry, thirsty state throughout the body that the nerve cells which the infantile paralysis virus strikes were unable to resist the virus attack.

When there is plenty of water in the tissues of the body, however, the virus tends to be localized at the invasion point and cannot grow and spread enough to cause disease. This, at least, appears to be the mechanism in the case of the vaccinia virus and the rabbits.

Food also plays a part in resistance to virus infection. Contrary to what might be expected, resistance to the virus is greater when the body is undernourished than when it is well-fed. This finding in the rabbit experiments bears out the observations of doctors that in virus diseases like infantile paralysis, it is the healthy, well-nourished children that are attacked. The reason, apparently, is that viruses are less able to multiply in poorly nourished cells.

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HORTICULTURE

Vegetables for Victory

Large Expenditures for Seed, Tools, Fertilizer Unnecessary, Even Inadvisable, in Present Campaign

By DR. FRANK THONE

See Front Cover

V STANDS for Victory: we all certainly know that by now. V also stands for Vegetables: those short green soldiers, drilled in straight ranks in our gardens, can in their humble, silent way do much toward winning the war through building up our health and morale. A garden gives us health and appetite while we are working in it—and provides the means for satisfying said appetite after it has built it.

So if you have a little piece of land, with soil reasonably fertile, and if you have the patience to go on tending and weeding after the first flush of spring-planting enthusiasm, then by all means plan and plant a Victory Garden. If you have only a little garden, it would be well to keep your planting list short, and put in it the vegetables that pay the highest returns on the space they occupy.

Vitamins and mineral salts are the things that receive most emphasis in present-day garden planning. Outstanding as vitamin vegetables are tomatoes, carrots, snap beans, all kinds of "greens". Worth noting is the fact that in a list compiled by the U. S. Bureau of Home Economics, two rather neglected "greens," collards and kale, outrank familiar and long-favored spinach. Interesting, too, is the fact that while beets and turnips do not rate very high as vitamin vegetables, their tops are among the best of "greens."

Old favorites, planted in almost every small garden simply because they taste good and provide something fresh after a winter of "boughten stuff," are the stand-by triad of radishes, onions, lettuce. Lettuce does have considerable vitamin value; the other two just taste good. But include all three by all means.

Before you rush out and buy a lot of seed, measure your ground and see how much you have room for. This is important now, because there is not the superabundance of seed there used to be in prewar years. We formerly imported most of our vegetable seeds from Europe, and we have not yet fully established American seed-growing industries. There is not an actual shortage, but there can be if everybody buys too much and plants too thickly, as home gardeners are apt to do.

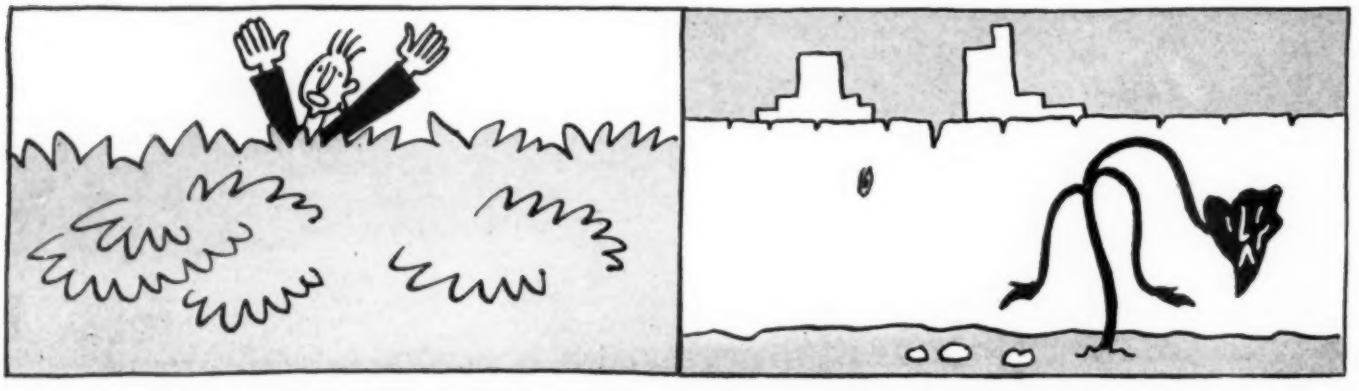
So measure your ground, figure how many feet of this and of that you will want, and buy accordingly. Your seed catalog, or the brief printed directions on the seed packets, will tell you. A good rule, unless you have room for a big garden, is to buy the smallest size packet offered in each kind you want to grow. It's easy to get more later if you want them. Several plantings of most vegetables should be made, anyway, to get a succession of fresh crops coming on through the season.

And whatever you do, save room enough for tomatoes. You can plant several kinds of seed before the danger of frost is past, but you must restrain your tomato enthusiasm until the tender plants can safely stay out all night. By the time you are ready for setting out this most important vegetable you may have harvested and vacated your first radish and lettuce beds, but even this space may not be enough. Even in the smallest garden, you see, foresight and planning are necessary.

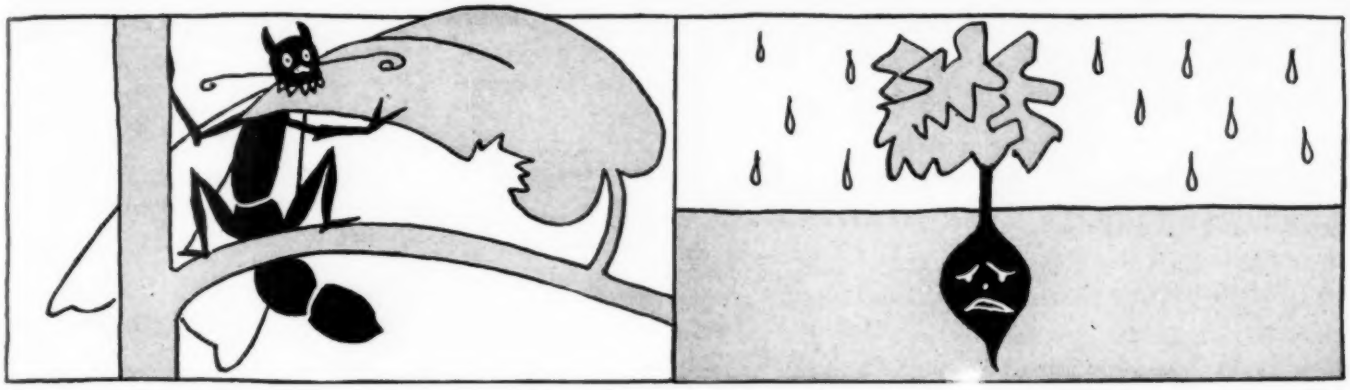
Gardening can be carried on very successfully with only a few simple tools. Elaborate equipment is not needed; indeed, in the present emergency, with metals of all kind needed badly for primary war purposes, it is dubious citizenship to buy more than a minimum of garden implements.

You can get along, in a pinch, with just three tools: a four-tined spading fork, a hoe, and a straight-backed, straight-toothed steel rake. A straight spade comes in handy, but you can get along without it if you must. That goes for a trowel, too; you can make an old butcher-knife do instead. You will also need a pair of sharpened stakes and a long string, to mark your garden rows; this, of course, you can make for yourself.

The whole point is, that it's bad wartime economy to lay out more money in tools and fertilizer than you are likely to get back in carrots and tomatoes.



Don't Use Too Much Seed **Don't Waste Good Seed On Bad Soil**



Don't Let the Bugs Beat You To It **Don't Spare the Water**

But don't let money-saving considerations induce you to buy low-quality tools. That's bad economy, too. Get good tools and take good care of them. Maybe you can make a deal with a neighbor to pool your purchases and take turns using them.

Never leave your fork sticking in the ground, or your rake and hoe lying outdoors overnight, even in dry weather. Dew can encourage rust quite as readily as rain. Clean off all tools every night as soon as you have finished using them, and hang them away in garage or basement. It will not only make them last longer, but will be safer for the family. Children at play often get serious injuries from stepping on the upturned teeth of a rake, or stumbling over the blade of a hoe.

The only other item of expense, aside from seeds and tools, may be fertilizer. Best fertilizer of all is one that was available free for the taking, back in horse-and-buggy days, but is all too often unobtainable now at any price—well-rotted stable manure. Horse or cow, it doesn't matter which, provided you can get it. But it should be well rotted. Manure freshly taken from the stalls has too much raw straw in it, also is apt to contain too many weed seeds.

Next best thing for your garden is a compost heap. You should start one now, so it will be ready by next spring. Just rake up all last year's dead leaves you can get hold of (the moister and mustier the better) and pile them in a back corner of your lot. Throw some earth on them, also a little manure, if you can get it. During the summer, pile all weeds from your garden and the clippings from your lawn on the heap, together with the clean vegetable and fruit parings and trimmings usually thrown into the garbage pail. Every once in a while, throw a little more earth on the heap.

Soil added to the compost heap has an important biological function: it introduces a complex swarm of fungi, bacteria and small earth-animals that reduce the raw vegetable tissues to the good black humus that makes soil fertile. So the soil you put on should be of the best in your garden, already containing the germs of fertility.

If you cannot get manure now, and have no well-decayed leaf-mold lying about to serve as ready-made compost, you may find it necessary to buy some commercial fertilizer. But again you should calculate your costs, comparing them with what you expect to get out of your garden. Do not make the mistake of trying to make raw clay or dumped-in coal ashes into fertile soil by piling on expensive fertilizer out of a bag. If your soil is hopeless by itself, better not attempt a garden.

No blanket recommendation can be made for the kind of commercial fertilizer. The kind your dealer keeps, for professional gardeners of your own region, is likeliest to be satisfactory for small gardens as well. A 5-10-5 formula is good.

Fertilizer should be applied after the soil is spaded and raked, just before planting. The best way is to lay a strip of the powder on top of the soil, a few inches away from the line where the seeds will go. If you put it right along with the seeds it will "burn" the tender seedlings. If you broadcast it all over the garden, much will be wasted. It is impossible to give a hard-and-fast rule for quantity to use, but roughly about one pound for every 30 feet of garden row should be about right.

Spading up a garden in the spring isn't as simple a job as it looks. There's a very definite trick to it, if you are to do it right. Many persons make gardens all their lives without ever turning the soil properly—and most of them never realize the difference between correct and poor spading.

Basic trick in spading is to turn each forkful of soil completely over, so that what was the top is at the bottom, and what was nearest the tine-tips is brought to the top. That is essential, to get the nutrients already in the soil properly distributed, and even more so to get the manure or compost (previously spread in an even layer on top) down where the roots will reach it.

Spading, as done by a vast number of home gardeners, merely stirs the earth about and loosens it, but does not invert it. It is better than nothing, but that is all that can be said for it.

That peculiar twist or toss of the garden fork, that turns the load of earth properly upside down, cannot be described in print. You can get some idea from watching an experienced gardener. But to learn it for yourself you simply have to keep trying until you get it, just as you do to turn flapjacks. Your first few efforts are likely to end in a mess, but after a while you get the hang of it, and from then on it's an unconscious part of your gardening technique.

It does not do to take over-large bites with your fork—that's bad manners in the garden as it is at the table. Besides, too much at a time is apt to bend or break a tine. Four inches or so at a time is a fair load. Drive the fork all the way into the soil with one strong thrust of your foot. Then lift and flip it upside down.

Give each forkful a whack with the back of the fork, to break up the larger clods. Go over the ground with the back of the hoe, to do a (*Turn to page* 203)

ANIMAL HUSBANDRY

Pigs Thrive on Eggs Spoiled in Incubators

POSSIBLE use for eggs that fail to hatch in incubators is suggested by a series of experiments conducted at Cornell University: feed them to pigs.

Two pigs were fed on a mixture of ground corn and eggs that had failed to hatch after 21 days of incubation. Unappetizing as the diet may seem to human imagination, the pigs apparently liked it, and gained nearly a pound a day on it.

The record is all the more noteworthy, since raw egg white usually disagrees with animals receiving it in too large quantity. Two possible explanations are suggested: either the pig has a special set of digestive enzymes that can handle raw egg white, or the incubation amounts to a kind of long, slow cooking process.

The experiments were performed by a four-man research team consisting of J. P. Willman, C. M. McCay, O. N. Salmon and J. L. Krider. They are reported in the first issue of a new scientific publication, the *Journal of Animal Science*. (*Reviewed, SNL, this issue.*)

Science News Letter, March 28, 1942

PUBLIC HEALTH

Care of Babies During Air Raids Is Explained

IF AN air raid comes, never let the baby suspect how scared you are. Compel yourself to an appearance of calm at least, so that the child's confidence in your protectiveness may be unshaken, advises the American Committee on Maternal Welfare. The Committee has drawn up a set of instructions for the care of babies during air raids. (*Journal, American Medical Association,* March 21.)

It is inadvisable even to talk about air raids in their presence, no matter how young, the Committee declares. Children frequently understand more "grownup talk" than their elders suspect, and terrors impressed on young minds may result in life-long mental maladjustments. It is stated that many problem cases among grownups of the present generation in Europe are traceable to their parents' unguarded talk during the first World War.

Some suggestions by the Committee: "When the raid signal sounds, the first move should be in the direction of the nearest shelter. If there is no shelter, take the baby to the safest room in the house or to a closet under the stairs or under a table or bed, so that he may be protected from flying debris, which presents the most frequent danger.

"Take with him garments enough to keep him warm according to the season, a basket or pillow on which he can lie, a first aid outfit in case of need; a toy to amuse him; his bottle of milk and bottle of water, together with extra diapers and related equipment. The baby's ears should be blocked with cotton to minimize the effects of concussion, leaving plenty outside so that it may be easily withdrawn afterward.

"If the raid should come while the baby is away from either house or shelter—for an airing in the park, for instance—find the nearest wall or ditch, however low, place the baby on the ground beside it, with pillows from the baby carriage or a heavy coat under and over him, and lie down beside him."

Science News Letter, March 28, 1942

ENGINEERING

American Tanks Best Because of Engine Power

AMERICAN tanks get the better of their opponents very largely because of their great engine power, declares Brig. Gen. G. M. Barnes (*Army Ordnance,* March-April). Compared with their European "opposite numbers," our tanks have twice the horsepower per ton of weight, he states. This gives them greater speed and maneuverability, enabling them to get into positions where their formidable gun power can be used to greatest advantage, and also making them fleeting targets that enemy antitank guns find it difficult to hit.

This advantage, already well demonstrated with our light and medium tanks in recent fighting in Libya, has been built into the new 60-ton "heavies" as well. Says Gen. Barnes:

"While there are heavy and supertanks in existence in Europe, there is no vehicle known to exist which would approach the American 60-ton supertank in regard to power of weapons carried and horsepower of engine used to drive it at high speeds across country. The Ordnance Department has maintained in this vehicle the same high horsepower-weight ratio employed in the designs of its light and medium tanks so that the cross-country mobility of the vehicle should in every way duplicate that of the smaller vehicles developed previously."

Science News Letter, March 28, 1942

IN SCIEN

BIOLOGY

American-Grown Supply Of Rat Poison Available

RED SQUILL, one of the most effective rat poisons, may be obtained from American-grown sources, thanks to a "fortifying" process developed by Glen Crabtree, biologist at the Wildlife Research Laboratory. The poisonous drug has always been imported from the Mediterranean region, and this source has now been cut off. Red squill has been grown in this country, but for some unknown reason the American-grown bulbs have never been sufficiently toxic to kill rats.

Mr. Crabtree's process consists simply in extracting the poisonous principle from pulverized American bulbs with alcohol, and adding it to other dried squill to raise its level of toxicity.

Large supplies of effective rat poison are needed more than ever, now that necessary protection of Army cantonments has been added to the already existing danger of these plague-carrying pests, and the $189,000,000 worth of property damage yearly for which they are held responsible.

Science News Letter, March 28, 1942

ASTRONOMY

Star-Like Object May Be Year's Second Comet

FROM Finland comes news of a mysterious celestial object traveling rapidly northward in the same part of the sky that was traversed a few days ago by Whipple's comet. If the new object turns out to be a comet, it will be the year's second, Whipple's being the first. The discovery was made March 12 by Y. Vaeisaelae, director of the Observatory of Turku, Finland.

The Harvard College Observatory, clearing house for astronomical information, received the news and transmitted it to American observatories. None of these has as yet confirmed the discovery, and the Harvard astronomers have been unable to find the object on their patrol plates.

Science News Letter, March 28, 1942

E FIELDS

PHOTOGRAPHY

Army Planes Photograph By Brilliant Flash

HOW U. S. Army planes can photograph enemy territory at night without themselves being seen was revealed by Ernest E. Johnson of the General Electric Company in a forum address.

Photographic planes drop flares that light up the countryside below very brilliantly for just an instant. The camera shutter in the plane is synchronized with the flash by means of a photoelectric cell. The flash is so brilliant and blinding that no one from the ground can see anything above. The plane carries home photographs that tell much more than the unaided human eye could ever see.

Science News Letter, March 28, 194.

BIOLOGY

No Rest For Living Cell Even At Start of Growth

A LONG-SOUGHT clue to a more complete understanding of the living cell, the basic unit of all life, has been found in experiments with the atom-smashing cyclotron at the University of California.

An investigator has shown that in the first stage of development of the cell, which is called the resting phase, and during which time the cell is supposed to remain inactive, this tiny unit of life is constantly changing.

One function of the cell is to reproduce, and it does this by progressing through a number of fairly definite stages until it finally splits into two cells.

It is the simplest biological unit, consisting of a nucleus with chromosomes, rod-like structures considered to be the carriers of genes, chemical entities which determine heredity.

According to classical biological teachings the cell in the resting phase is inactive. In the second phase of development the number of chromosomes doubles, in the third the membrane around the cell nucleus disappears, and in the final stage the cell splits in two. The new cells enter immediately into the resting stage, and according to the theory remain dormant for a while before they start the cycle over again.

The new findings were brought out in experiments with cancer and plant cells by Dr. Alfred Marshak, research fellow in the Radiation Laboratory.

Dr. Marshak bombarded the cells with both X-rays and the neutron rays produced by the cyclotron, and made a comparison of the damage to the chromosomes of the cells in the resting phase.

The investigator found that neutrons produced relatively more damage to chromosomes in the resting phase. At certain definite periods in this phase the relative efficiency of neutrons in producing this damage is much greater than at others.

Dr. Marshak said this clearly indicates distinct physiological states, rather than one inactive phase. He said that he has no idea of the character of these states, but that the evidence does give science a new clue to the functioning of life's simplest unit.

Science News Letter, March 28, 1942

POPULATION

American Population Is Becoming Stationary

AMERICANS are probably headed toward a stationary population and perhaps even a declining one, according to findings of statisticians of the Metropolitan Life Insurance Company.

To reach this conclusion, statisticians studied fertility rates in this country for the past twenty and more years. Fertility rates, it is explained, may be measured by the number of daughters born annually to a thousand women within the child-bearing age groups. For each of seven age groups the fertility rates dropped in passing from 1920 to 1930 and again to 1940.

As a result, the rate of population increase fell from 8 persons per 1,000 in 1920 to one person per 1,000 in 1940. For 1941 the rate increased to 2.8 per 1,000 due to more prosperous times and increased marriage rates due to the war.

It is pointed out, however, that "with a large element of our able-bodied men in the armed services—and the consequent disruptions of family life and postponements of marriage—the effective fertility of the American people is likely to fall below the level required to maintain a stationary population."

Science News Letter, March 28, 1942

VETERINARY MEDICINE

Sulfa Drug Effective Against Poultry Disease

SULFAGUANIDINE, one of the more recently developed drugs of the sulfa group, has been found effective in the treatment of cecal coccidiosis, one of the most troublesome of poultry diseases, by Dr. J. R. Beach of the University of California College of Agriculture. Dr. Beach is now engaged in experiments to determine the possible value of the drug in other related poultry maladies.

As yet, the treatment is on an experimental basis, for sulfaguanidine has not been released for general use and is still quite expensive. Its cost may be brought down, however, if a large-scale use can be found.

Science News Letter, March 28, 1942

GEOLOGY

Adirondacks Half as Old As Is the Earth Itself

THE Adirondack mountains are half as old as the earth itself. New measurements of the age of these northern New York uplands, based on the relative amounts of thorium and lead in one of the minerals found in them, indicate an antiquity of 1,100,000,000 years. This confirms an earlier estimate, made in 1939, based on a different mineral. The Adirondacks are of the same age as the Laurentian highlands, a much larger ancient mountain mass in Canada, on the other side of the St. Lawrence river, and separated from the Adirondacks by a wide zone of much younger rocks.

The new age determination was made on a mineral known as allanite, specimens of which are in the U. S. National Museum, by Dr. J. P. Marble of the National Research Council's committee on the measurement of geologic time. The 1939 determination, made on a uranium-containing mineral known as uraninite, was carried out in a laboratory in Vienna, now inaccessible because of the war.

Age determinations of this kind are based on the fact that radioactive elements like thorium and uranium undergo a series of breakdowns, during which they gradually change into lead. Since the rate of the element-changing decay is known, the age of the rocks can be calculated from the relative amounts of radioactive element and lead present in them.

Science News Letter, March 28, 1942

ASTRONOMY

Bright Stars Shine

April Evenings Will Be Adorned By Ten First Magnitude Stars, Record for Year and More Than Half of Total

By JAMES STOKLEY

THE EVENING skies of April, at the hours for which these maps are prepared (about 11 p. m., WT, at the beginning of the month and 10 p. m. in the middle) show more first magnitude stars than any other month. Ten are indicated, the record number for the year.

There are only 22 first magnitude stars in the whole sky. Six of these are so far south that they are not visible from most of the United States, or from any part of Canada. Thus, more than half of those which we can ever see are in the sky simultaneously these evenings.

This is true every April, but in this April of 1942 the glorious spectacle is further enhanced by the addition of three planets which, as it happens, are all in the same constellation of Taurus, and among some of the most conspicuous stars.

The brightest star or planet that you will see in the evening is Jupiter, now of magnitude minus 1.6 and very slightly brighter than Sirius, the dog star. There should not be very much trouble in distinguishing star and planet. For one thing, Sirius is farther south. It shows the typical "twinkling" of a star, while Jupiter shines with a steadier glow.

Mars Close By

Close to Jupiter, and much fainter, is the planet Mars, of magnitude plus 1.6. On the evening of April 3 Mars passes Jupiter, to the north, at a distance of less than two degrees, which is about four times the apparent diameter of the moon. Saturn is the third of our evening planets, but it is not indicated on the maps. It is also in Taurus, but much lower than the other two, so it sets before the map times. Just as soon as the sky is dark, especially during the first half of the month, you can see it low in the west.

As for the other planets, Venus is still very brilliant, of magnitude minus 4, as a morning star, which comes up some two hours ahead of the sun. Mercury is so close to the sun that it will not be seen at all this month.

Among the stars, Sirius is, as we mentioned, the brightest. It can be seen to the southwest. To the right of Sirius is Orion, with the three stars of the warrior's belt near the horizon. Above them is Betelgeuse. (Rigel, below the belt, is not shown on the map, but it is visible earlier in the evening.) Farther to the right, and near Jupiter, is Aldebaran, in Taurus, the bull. Above Orion are Gemini, the twins, with first magnitude Pollux, and his brother Castor, of the second magnitude. About half way between Sirius and Pollux is Canis Minor, the lesser dog, with Procyon. And in the northwest, below Gemini, is Auriga, with Capella to be seen.

Spring Stars in South

These are all stars of the winter sky, ones that will soon vanish from the evening firmament. But to the south and east we see others that are typical of the skies of spring. High in the south is Leo, the lion, which can be recognized by a group called the Sickle, with Regulus at the end of the handle. Left of Leo, and lower, is Virgo, the virgin, in which Spica shines. Above the easternmost end of Virgo is Bootes, the bear driver, marked by Arcturus. Finally, very low in the northeast, Vega is indicated. This is in Lyra, the lyre. On summer evenings, with Sirius out of sight, Vega is the brightest star.

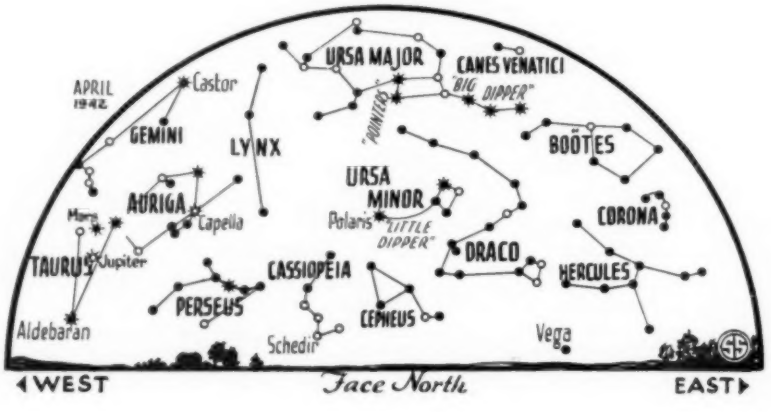
Though it contains no first magnitude stars, the great bear, Ursa Major, of which the great dipper is part, appears now in its best position, high in the north. And also this is the best time to see another constellation that is one of the longest in the sky. It is Hydra, the water snake, in the south below Leo. An irregular figure of six stars in the southwest makes the head of the snake, and his tail extends far to the southeast, ending just under the star Spica. Brightest star in this group is Cor Hydrae, of the second magnitude, marking the serpent's heart, and almost under the sickle.

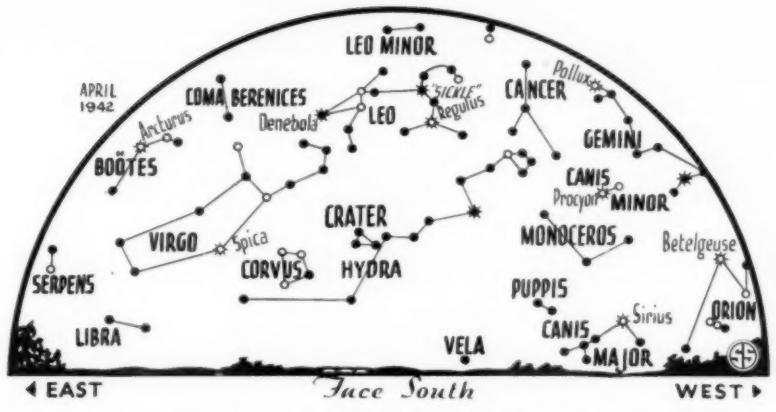
When, on Sunday, April 5, despite the war, the Christian world celebrates Easter, they are observing an event which depends on astronomical considerations. This year it happens that the event falls about in the middle of its range. It can come as early as March 22, which it did last in 1818. Or it can come as late as April 25, as it did in 1886, and will next year.

It all depends on the phases of the moon. Easter represents an adaptation, by the early Christian church, of the Hebrew Passover. The Jewish calendar is a lunar one, each month starting with the first appearance of the new crescent moon. Fourteen days later the moon is full, so the 14th of every Jewish month is a day of full moon. The 14th day of the month of Nisan, which comes right after the vernal equinox, the beginning of spring in March, is the beginning of Passover.

First Easter on April 9

According to leading authorities, the Crucifixion took place in 30 A. D. The 14th day of Nisan in that year, a date which we can check because astronomers can figure back to see exactly when the phases of the moon occurred even thousands of years ago, was Thursday, April





6, according to our reckoning. This was the day when Christ ate the Passover feast with the Disciples. The next day, Friday, April 7, was Good Friday, the day of the Crucifixion. The next day was the Hebrew Sabbath, and the day after that, Sunday, April 9, was the first Easter.

In the early days of the Christian church, there was a long and famous controversy, as to the exact date that Easter should be celebrated. The converts from Judaism wished to go on celebrating Passover, which to them had a new meaning. They wanted to observe it immediately after the Full Moon, regardless of the day of the week. But the Gentile Christians wanted to celebrate Easter always on Sunday, since it had been on that day originally.

The Council of Nicaea, in 325 A. D., recognized the latter view, and set the rule for Easter which we still observe. That is, Easter is the first Sunday after the full moon on or after the vernal equinox. In case the full moon falls on a Sunday, it is the following Sunday that is Easter. This was done to prevent Easter and Passover from ever coinciding.

Since Easter varies over a range of 35 days there was, before the war, a movement to stabilize the date on the first Sunday after the second Saturday in April. Of course, this is also connected with the whole problem of calendar reform. Certainly there are many things wrong with our calendar of today, even though we are used to them. Perhaps, in the new and better world that we hope will follow our victory, the calendar may have a long overdue change.

Celestial Time Table for April

Wednesday, April 1, 8:32 a.m., Full moon (this is the Paschal moon, determining Easter). Friday, April 3, 12:00 p.m., Mars passes Jupiter. Saturday, April 4, 2:00 a.m., Moon nearest, distance 226,700 miles. Wednesday, April 8, 12:43 a.m., Moon in the last quarter. Saturday, April 11, 12.03 p.m., Moon passes Venus. Monday, April 13, 4:00 p.m., Venus farthest west of sun. Wednesday, April 15, 10:33 a.m., New moon. Saturday, April 18, 12:18 a.m., Algol at minimum; 1:04 a.m., Moon passes Saturn. Sunday, April 19, 9:26 p.m., Moon passes Jupiter; 12:00 p.m., Moon farthest, distance 251,900 miles. Monday, April 20, 12:59 p.m., Moon passes Mars; 9:07 p.m., Algol at minimum. Tuesday, April 21, early a.m., Meteors of Lyrid shower, apparently radiating from constellation of Lyra. Thursday, April 23, 2:10 p.m., Moon in first quarter; 5:57 p.m., Algol at minimum. Thursday, April 30, 5:59 p.m., Full moon.

Eastern War Time throughout.

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From Page 199

little more breaking up, if necessary. Finally, work the smaller clods down to a proper granulation with the rake, at the same time smoothing and leveling the surface. The back of the rake, not the teeth, is the right tool for this.

Now you are ready to plant. Set your stakes at either end of your plot, stretch the line between them. If you are using commercial fertilizer, lay some along the line thus marked—a pound for every thirty feet. Work this in by raking lightly. Then move the stakes over a few inches, trace a shallow furrow for the seeds, drop them in and cover them up.

Depth and spacing vary according to the size of the seed and the amount of space the plant takes up when grown. In general, the smaller the seed the shallower the planting. Beans should go two or three inches deep, according to type of soil, beets about an inch, radishes and turnips a half-inch or so, carrots and lettuce only a quarter-inch.

Don't plant too thickly. Most home gardeners tend to do so, anyway. And in this year of war, when there are seeds enough to go around but none to lavish through over-planting, we should look on our seed-packets almost as cartridge-belts—make every one count.

Planting a garden is undoubtedly the most enjoyable part of the job. But your gardening isn't finished when you have got the seeds in the ground and stand up to straighten out the kinks in your back. ("Half a proper gardener's work," says a perspicatious poet, "is done upon his knees.") A little hoeing, and a great deal of laborious thumb-and-finger weeding, are necessary if you are to reap where you have sown. And if you are not willing to do the weeding, better not start a garden at all: an unweeded garden is largely a waste of labor, fertilizer and seed.

No particular instructions are needed for weeding, except that you keep everlastingly at it. Save all weeds and throw them on the compost heap; thus you will harvest good out of evil.

The one important thing about hoeing is that you do it often, and thoroughly enough to kill all weeds between rows, but not too deeply. Deep hoeing will cut off important feeding roots, for most garden vegetables are shallow-rooted. Frequent light hoeing will maintain a dust mulch on the surface, which will reduce loss of moisture through evaporation during dry spells, and keep the soil in better tilth throughout the season.

Finally, after many days of struggle against weeds and bugs and backache, you will begin to reap your crimson and green and golden rewards. Don't wait too long. Some gardeners, in a quite understandable desire to get the largest possible returns for their expenditure of effort and money, wait until their vegetables have reached maximum size. By that time there is danger of their being over-ripe, hard, tough or stringy. Catch them while they're young, and use them while they're fresh, is the be-all and end-all of the home vegetable harvest.

The illustrations on pages 198 and 199 are from "A Dozen Don'ts for Gardeners" which appear in *Consumers' Guide* (March 1) prepared by the Consumers' Service Section of the U. S. Department of Agriculture.

The interest taken in the home garden by even the youngest in the family is shown in the picture on the front cover of this week's SCIENCE NEWS LETTER, which is an official photograph of the Farm Security Administration.

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PHYSIOLOGY

Vitamin Treatment Offers Little Hope for Gray Hair

As Old Age Advances, Less Melanin Is Produced And Transferred to Hair, Anthropologist Explains

GRAYING hair on the head is like gray ashes on the hearth—a sign of dying fires. And there is little hope of permanently banishing the telltale sign of age through administration of vitamins or any other treatment, Dr. Ales Hrdlicka, Smithsonian Institution physical anthropologist, has just reported to the American Medical Association.

Hair color, Dr. Hrdlicka explained, is due to the presence in the hair of a dark pigment called melanin. It is produced by the body's oxidation processes, and is deposited in the hair by the blood. Count up all a lifetime's haircuts, and it will be seen that a considerable quantity of melanin is cast out of the body by this curious method of excretion.

But as age comes on, and the body's physiological fires burn lower, less and less melanin is formed and transferred to the hair, which thus turns gray and perhaps finally pure white.

Dr. Hrdlicka expressed doubt regarding stories of men's hair turning white in a single night through sudden terror or grief. Melanin once in the hair cannot be changed in response to mental stress or anguish, however great, he explained.

Concerning the possibility of reversing the graying process through the use of vitamins, he had this to say:

"If the hair and its pigment are viewed in this manner, and the normal graying is regarded as a gradual decline in the production of melanin, it is difficult to see how any vitamin or other substance could restore former conditions.

"Something of this nature could conceivably be possible for a while in the early stages of the process, but would steadily grow more difficult with time until it became impossible. It would be in vain, it would appear, to expect now or in the future more from drugs or other substances than a possible delay of the graying process, with perhaps a moderate restoration of color for a time during the earlier stages of the graying period."

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HORTICULTURE

Cotton Picking Machines Require Special Breeds

COTTON must meet the harvester half-way, if successful machine harvesting of this number one textile crop is ever to replace the present back-bending, neck-blistering, finger-wearying method of hand picking, H. P. Smith and D. T. Killough of Texas A. and M. College declared at the meeting of the American Society of Mechanical Engineers in Houston.

Machines for harvesting cotton fall into two main classes, the two engineers explained: pickers and strippers. Pickers undertake to pull the lint out of the boll, duplicating the hand job by either mechanical or pneumatic means. Strippers tear boll and all from the plant, and try to extract the lint as cleanly as possible afterwards.

Both types of machines run into difficulties, because of the innate perverseness of the cotton plant itself. Wheat, corn and other crops now harvested by machinery are relatively simple jobs: they ripen all at the same time, they bear their fruit at or near the same level, they don't hang on too tightly. Cotton ripens unevenly at all levels on plants of varying height, with wide differences in "pluckability" of the lint.

Engineers, being mechanical-minded, have a tendency to build cotton-harvesting machines that really ought to do the job, and then are bewildered and annoyed when the cotton plant crosses them up. The answer, in the opinion of Messrs. Smith and Killough, lies partly in patiently trying to make the machine better adapted to its difficult crop, partly in trying to breed cotton varieties that will be less difficult for the machine to handle. Some success has been achieved in the latter direction, they indicated, but a great deal still remains to be accomplished before the perfect "machine" cotton can be proclaimed as ready for the fields.

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The United States has the only proved 2,000-horsepower *airplane engine* in the world, according to Dr. Jerome C. Hunsaker, Massachusetts Institute of Technology.

● RADIO

Saturday, April 4, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. R. G. Hoskins, of the Memorial Foundation for Neuro-Endrocrine Research, Harvard Medical School, will present the highlights of the meeting of the Federation of American Societies for Experimental Biology.

Tuesday, March 31, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04 and 11.73 megacycles.

T. Russell Mason, of the Massachusetts Audubon Society, will talk on "Are You Ready for the Birds?"

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

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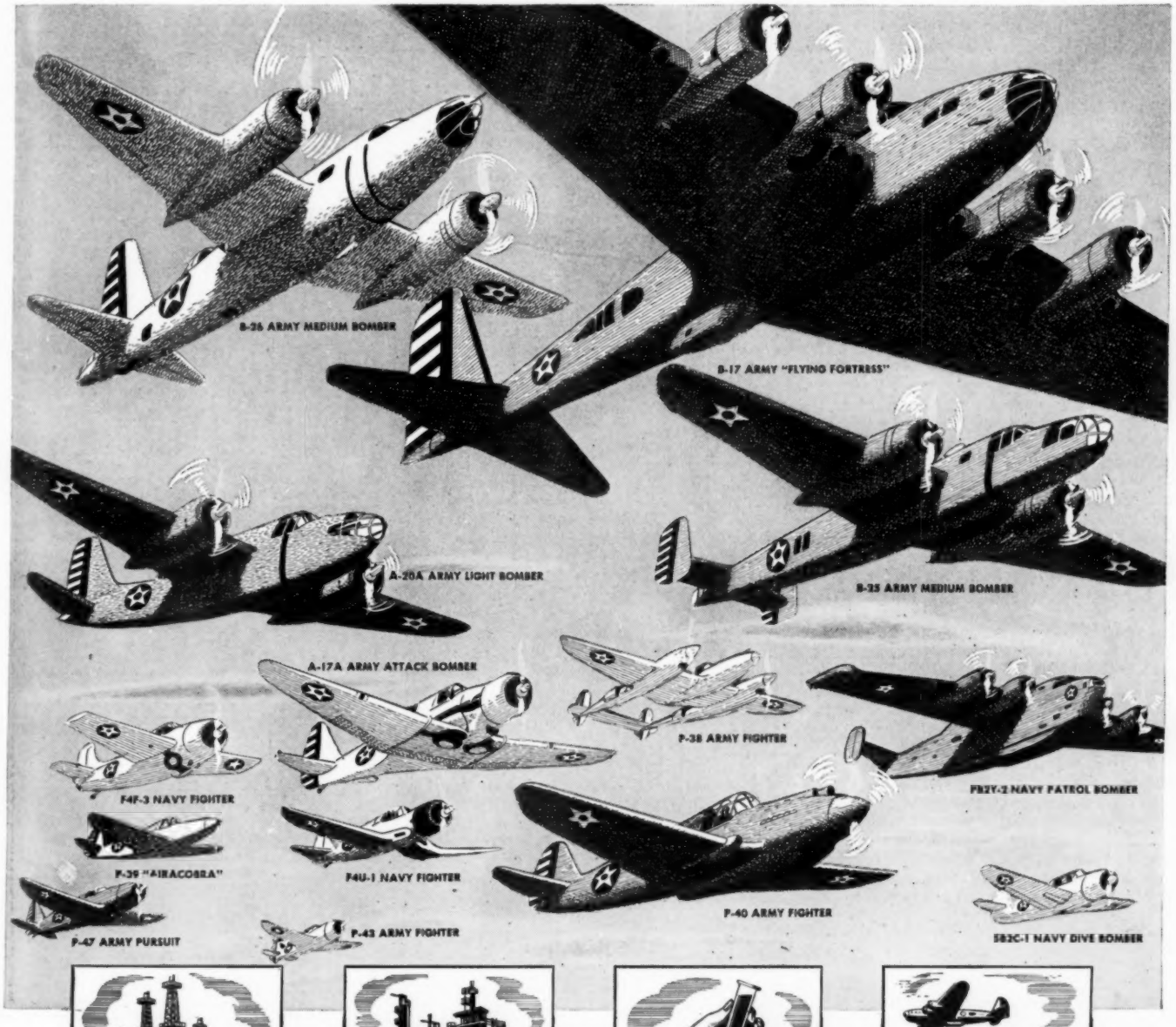
In ONE way all these American war planes are alike

★ All American fighting planes have one important feature in common: their engines are designed for high-octane gasoline. That's the basic reason why they have more power than similar enemy planes. And because they have more power, they will—plane for plane—outfly and outfight our enemies'.

We alone have *all three* things needed to produce high-octane gasoline—and plenty of it: *one*—vast resources of high quality crude oil; *two*—superior refining processes, developed by America's petroleum industry; *three*—adequate production of anti-knock fluid to improve octane ratings of military gasolines.

The makers of Ethyl brand of anti-knock fluid have geared their plants, laboratories and technical staffs to meet the oil industry's war needs. Until victory is won, our Army, Navy and Allies have first call on Ethyl fluid to make fighting fuels for planes, tanks, armored cars and other mechanized equipment.



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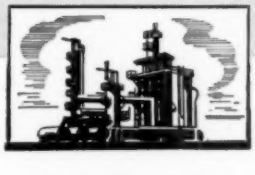

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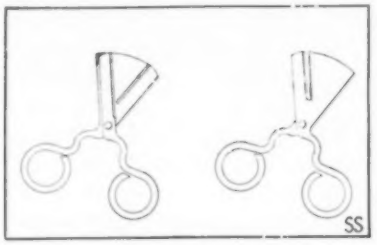
Novel Things for Better Living

To prevent rusting of fine tools or measuring instruments, they may be packed in air-tight containers in which a wide-mouth open bottle containing a few lumps of calcium chloride is placed. This substance absorbs moisture from the air. After some months the chemical will have absorbed so much moisture as to have become liquid. It should then be renewed or it can be recovered for further use by heating until all the water is driven off.

"Got a match, Buddy?" The cigaret smoker always would if his smokes came in a newly patented package. With it, you tear off a narrow strip of perforated paper near the bottom of the fresh package. This exposes the lower ends of a row of ten cardboard matches lying between an inner and an outer wrapper. As each match is drawn out from between the two wrappers, with it comes away a little perforated square of the upper wrapper which held it in place. When the first ten are used another row is exposed—twenty matches for twenty cigarets.

A plastic photo-flashlamp, that has many advantages over the conventional glass flashlamp, has just been patented. In the first place, it is made in the form of a wallet or pocketbook, flat, so that many can be stacked together in small space and easily carried or stored. Second, it is cheaper and simpler than the glass flashlamp; and third, less subject to breakage. The plastic is preferably, the inventor says, cellulose acetate, which is transparent, heat resistant, and strong enough not to explode. The lamp is fired electrically in the usual way, but using three ignition points, produces a very intense and short flash.

Safety scissors, so constructed that you cannot get your finger or anything else but the material you are cutting between the blades, are shown in the illustration here. They have recently



been patented. One blade of this scissors is of the ordinary type, but the other is a wide plate, V shaped in outline, with the pivot near the bottom of the V. This plate has a slot in the position where the other blade of the scissors normally would be. One edge of this slot is sharpened and is in fact the other blade. The material to be cut is slid into the slot. The other (normal) blade slides over the plate in cutting the material. Since the V plate covers the whole distance between the cutting edges, whether opened or closed, nothing can get between the cutting edges but the material in the slot.

Blowout perils are reduced by a recent patented invention which prevents the sudden deflation of a tire, the usual cause of accident, when a blowout occurs. The tire is divided into an inner and an outer chamber by means of an intervening wall, so that when the air blows out of the outer chamber, the inner chamber will still carry the vehicle—limpingly—until repairs can be made. To provide for inflation and deflation—as when demounting the tire—there must be an opening in the wall between the two chambers. This may be provided with a valve that will close when there is a sudden release of pressure in the outer chamber. This has been tried before but not found entirely satisfactory. The present invention improves the valve by calling to aid centrifugal force which keeps the valve always securely closed so long as the vehicle is running above a particular speed—without waiting for release of pressure to operate it.

Nailing machines are used in the box-making industry. In the usual arrangement, the box is turned over and over and all the nails are driven in the side that is uppermost. To speed up the operations, a machine has been invented and patented which nails all three sides of the box in one operation, thus avoiding turning the box over three times.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 97.*

Science News Letter, March 28, 1942

SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

ONEONTA, N. Y.—An invitation is being extended to junior scientists, under eighteen years of age, to participate in the Fourth Annual Science Congress of the Oneonta Science Center. Young scientists from the counties of Otsego, Delaware, Schoharie, Broome and Chenango in New York State are encouraged to enter. The event will be held in the Junior High School at Oneonta on May 2, 1942. While primarily intended for members of Science Clubs of America, invitation has been extended also to non-members to demonstrate what they can do with their favorite subjects. Cooperating to make the event a success are Science Service, the Oneonta High School and Hartwick College. The purpose, of course, is to bring together the science clubs and science teachers in the territory covered by the Oneonta Science Center which is directed by Mrs. Madeline Frink Coutant.

JACKSON, Mich.—The activities of science groups in this city have spread into many fields. This year all age groups are cooperating to make the Fifth annual Science Fair for Jackson County an outstanding success. For the past four years the Science Club of East Intermediate School has held Science Fairs for city and county school clubs. This year the Science Fair hopes to have representatives of city and county civic organizations, industries and community groups participate in the activities. Based upon the pioneering work done by Miss Bertha E. Slye and her club members, Elwood Watson, director of the City's Recreational Council, is urging a mass effort of scientifically-minded persons to create and maintain interest in the subjects.

In the Jackson Citizen-Patriot, the local newspaper cooperating on the Science Fair, Mr. Watson says: "With scientific work attaining a new high in public interest since America's entry into the war, those in charge of the student enterprise feel that additional participation in science is essential to greater scientific developments in years to come."

The Fifth Annual County Fair for Jackson County will be held April 27 to May 2 in the basement auditorium of the Jackson County Building.

Clubs are invited to become affiliated with SCA for a nominal $2 for 20 members or less. You can become an associate of SCA for 25 cents. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

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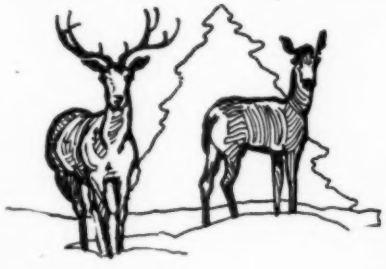
CONSERVATION

NATURE RAMBLINGS

by Frank Thone



Infirm Foundation

CONSERVATION of wildlife, soil and other perishable resources is ill practised in this country because the people lack understanding both of its urgent necessity and of the principles underlying it. They do not understand because our educational institutions, both school and post-school, have never adequately taught them. The teachers have not taught aright because they themselves have not been adequately taught.

This menacing chain of weaknesses is surveyed very soberly by one of the nation's leaders in the conservation movement, Prof. Henry B. Ward of the University of Illinois, in the concluding chapter of a new symposium-book, *The Foundations of Conservation Education. (Reviewed, SNL, this issue.)* Prof. Ward is not just indulging in a gloomy jeremiad: he sizes up the evils of the situation only as a means of getting a start toward their correction.

One of the principal contributing causes of this state of ignorance and indifference on the part of public and teachers alike, in his opinion, is the faultiness of present-day education in biology, a knowledge of which must underly any sound conservation program. Although first courses in life science, offered in the elementary grades, on the whole follow the good lead given a century ago by the great Louis Agassiz, in stressing outdoor, natural-history aspects of biology, more advanced courses of college and high school level have departed from this sound practice—and have grievously erred in so departing.

College biology courses nowadays place first stress on the study of classification, anatomy and microscopic structure—all of them practised on dead (and usually pickled) material. High school courses are usually merely trimmed-down and watered-out versions of what the teacher himself studied in college.

As a result, the teaching is frequently done in a routine, deadening fashion, the students are bored and gladly escape from taking the course at all when an accommodating elective system permits them to do so, and a generation of citizens has grown up without understanding of what goes on in the world about them—or even in their own insides.

In his advocacy of reform, Prof. Ward would not go so far as to thrust separate courses in conservation into already overcrowded school and collect curricula. Better, he thinks, to reconstruct biology into a real life science, and to let conservation doctrine be inculcated as a point of view integral with biological teaching and essential to it, and as a guiding principle in many other courses as well, even outside the formal boundaries of the physical sciences.

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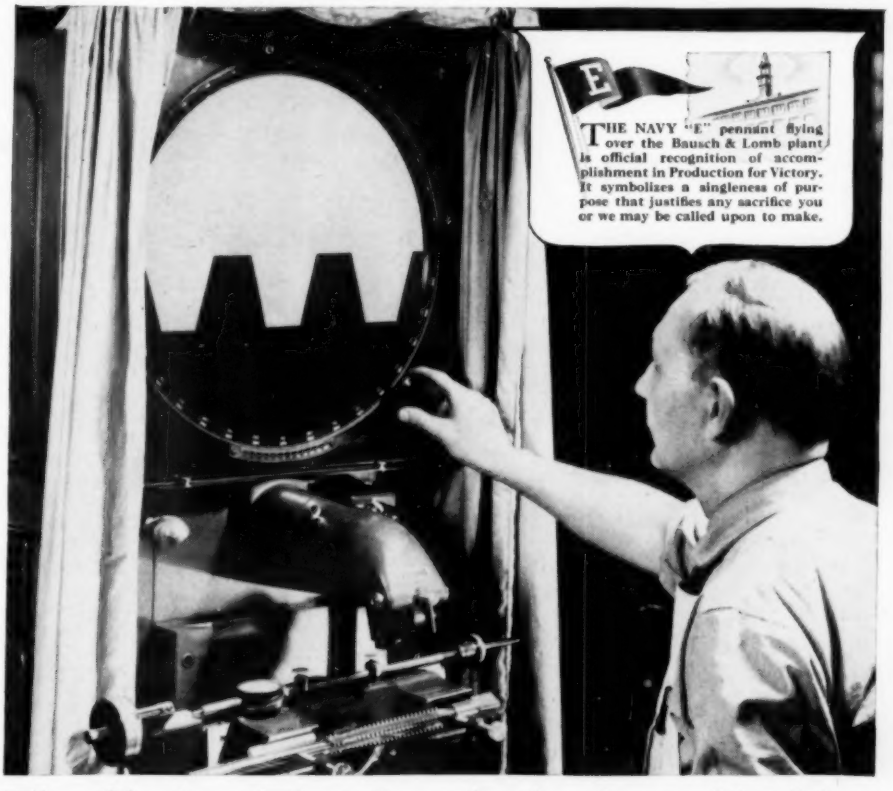
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•First Glances at New Books

HORTICULTURE

VEGETABLES IN THE GARDEN AND THEIR LEGENDS — Vernon Quinn — *Lippincott,* 260 p., illus., $2.50. Did you know that the Latin name for tomato, *Lycopersicum,* means "wolf-peach" and was bestowed upon this noble vegetable through error? Or that a wartime diet of leeks gave King Arthur's men such strength that they licked the very stuffing out of the Saxons? These and hundreds of other equally fascinating bits of plant lore will grip your attention while you read this book, and will doubtless make your planting and hoeing outdoors more interesting, too.

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HORTICULTURE

SCIENCE IN THE GARDEN—H. Britton Logan and Jean-Marie Putnam—*Duell, Sloan and Pearce,* 255 p., $2.50. Science has done much to lighten the gardener's task and to make his harvest heavier—aids ranging all the way from the breeding of improved varieties and the study of physiological behavior of plants to the physical and chemical analyses of soil and the more accurate judgment of what and how much fertilizer to apply. This book summarizes in masterly fashion some of these outstanding contributions.

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HORTICULTURE

25 VEGETABLES ANYONE CAN GROW—Ann Roe Robbins—*Crowell,* 219 p., illus., $2.25. An appetizing alphabetical list of things any reasonably diligent home gardener can produce, from asparagus, beets and carrots to radishes, squashes and tomatoes. The various chapters go into some detail about each vegetable, giving a brief historical sketch, outlining food (especially vitamin) values, telling how to plant and cultivate. There are also, as appendixes, frost-zone maps, garden charts, and directions for storing and canning.

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HORTICULTURE

ASPARAGUS PRODUCTION — Homer C. Thompson—*Orange Judd,* 124 p., illus., $1.25. A compact manual for the growers of one of the most specialized of market vegetable crops.

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HORTICULTURE

THE TOMATO—Paul Work — *Orange Judd,* 135 p., illus., $1.25. With greatly increased production in tomatoes called for, to supply the vitamin needs of our allies as well as of our own population, new producers will doubtless be drawn into the market. These, and experienced tomato growers as well, will find this compact discussion of essential facts about an essential vegetable highly useful.

Science News Letter, March 28, 1942

ANIMAL HUSBANDRY

JOURNAL OF ANIMAL SCIENCE—American Society of Animal Production—*George Banta Pub. Co., 450-454 Ahnaip St., Menasha, Wis.,* quarterly, $3. A new journal, devoted largely to studies in animal nutrition, growth and related subjects. About a third of the present issue is devoted to abstracts of papers presented at the annual meeting of the sponsoring Society. See also page 200.

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ESSAYS

THE PRIME OF LIFE—Gove Hambidge —*Doubleday, Doran,* 243 p., $2. A Book of Hours, by the editor of the Department of Agriculture's recent series of notable yearbooks. Gove Hambidge loves living in the country: how well, this leisurely, discursive, ruminating half-narrative, half-commentary on a day out of his life tells eloquently.

Science News Letter, March 28, 1942

BOTANY

A BOOK OF ROSES—J. Ramsbottom—*Penguin,* 30 p., 16 colored pls., 50c. A series of very well executed color plates of familiar rose types, with brief descriptive text. Although this book was produced in England, the species treated are commonly grown in the United States as well, so that American rose lovers will find it decidedly worth having.

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HORTICULTURE

MAGIC IN HERBS—Leonie de Sounin—*Barrows,* 208 p., illus., $2. A chatty, informative book on a subject that has attracted increasing attention of recent years, on the part of both gardeners and cooks. With the stock of imported cooking herbs now largely cut off by the war, it behooves those who like really tasty dishes to undertake growing some herbs of their own and learning how to use them. You can learn how here.

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GENETICS

NEW PATHS IN GENETICS—J. B. S. Haldane—*Harper,* 206 p., $2.50. See page 195.

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CONSERVATION

THE FOUNDATIONS OF CONSERVATION EDUCATION, Education in Conservation, Pamphlet No. 3—Committee on Conservation Education—*National Wildlife Federation,* 242 p., cloth, $1; paper, 60c. A symposium, participated in by several of the most active researchers and thinkers in the field of conservation: Mitchell, Lowdermilk, Sears, Pack, Horner, Ward. See also page 207.

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AGRICULTURE—HORTICULTURE

SEED TRADE BUYERS GUIDE, 1942 (25th ed.)—*Associated Seed Growers, Inc.,* 236 p., illus., $1. Although this yearbook is published primarily for the seed trade, it contains a mine of information useful to teachers in agricultural colleges, leaders of community gardening programs, and many others. In addition to classified lists of commercial sources of seeds and supplies, there are many pages of highly valuable information: a digest of seed laws, time tables for various crops, a competently written treatise on the legume family, etc. All round, a publication decidedly worth reading by any one who takes gardening seriously.

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ENGINEERING

COLLEGE ENGINEERING DRAWING — Leon Marr Sahag—*Published by author, Box 337, Auburn, Ala.,* 295 p., planographed, illus., $2.65. A college text, which is being used for all defense training courses in Alabama. The author is professor of machine design and drawing at Alabama Polytechnic Institute.

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HISTORY

UNCLE SAM'S STEPCHILDREN, The Reformation of United States Indian Policy, 1865-1887—Loring Benson Priest —*Rutgers Univ. Press,* 310 p., $3.75. Dr. Priest traces the unhappy history of Indian administration, during a period extending from the war between the states to the passage of the Dawes Act. It was, as we know, a period of maladministration by indifferent or dishonest public officials, and of total misunderstanding of real Indian problems and needs.

Science News Letter, March 28, 1942